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## Review of the Schizomidae (Arachnida, Schizomida) of Japan and Taiwan

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**Abstract** The order Schizomida is known from southern Japan and Taiwan by five species, all members of *Schizomus*. Synonymies and collection records are provided for the previously described schizomids of the region. A new species is described from southern Taiwan. The importance of the female genitalia in identifications is emphasized and a taxonomical key for identification of the *Schizomus* species from Japan and Taiwan is provided.

Arachnids of the order Schizomida are uncommon and little studied in eastern Asia. Species have been described from the southern islands of Japan, Taiwan, Philippine Islands, and Hong Kong, but no records are available from Korea and the People's Republic of China. Recent studies (primarily on New World species) have revealed the female genitalia to be valuable in identifying and understanding relationships within the order. In some cases, previously unrecognized species are identified by examination of the spermathecae. Such is the case for an undescribed species from Taiwan (COKENDOLPHER & REDDELL, 1986).

It is the purpose of this publication to describe the new species from Taiwan, and to provide synonymies, records, and a key for identifications for the five *Schizomus* species known from Japan and Taiwan.

Dr. Shun-Ichi UÉNO and Dr. Hirotugu ONO of the Department of Zoology, National Science Museum, Tokyo, are thanked for their correspondence regarding schizomids and the loan of specimens. Thanks are also extended to Dr. Manfred MORITZ of the Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität, Berlin, and Mr. James R. REDDELL of the Texas Memorial Museum, Austin, for the loans of additional specimens. Mr. REDDELL also carefully reviewed the manuscript. Dr. Nobuo TSURUSAKI of Tottori University, Tottori, kindly provided some of the literature and translations of some Japanese publications. Some other literature was provided by Dr. Leendert VAN DER HAMMEN, recently retired from Rijksmuseum van Natuurlijke Historie, Leiden, who also kindly discussed some problems in schizomid anatomy. Dr. Henrik ENGHOFF of the Zoologisk Museum, København, and Dr. Gisela RACK of the Zoologisches Institut und Zoologisches Museum, Hamburg, are thanked for correspondence on schizomids in their respective museums. This study was supported in part by the Department of Entomology,

Texas Tech University, Lubbock, Texas.

The methods and terminology essentially follow those of REDDELL and COKENDOLPHER (1985), except several different anatomical terms are used following HAMMEN (1986). Specifically, the prosoma [=cephalothorax] is composed of the propeltidium [formerly carapace], prodorsum arthrodial sclerites [formerly mesopeltidium], and postpeltidium [formerly metapeltidium]. The sternum [formerly anterior or cephalic sternum] is between leg coxae I and II. The "posterior or thoracic sternum" is no longer considered to be part of the prosoma. HAMMEN suggests the posterior sternum is actually sternite VII. The opisthosoma [formerly abdomen] consists of body segments VII-XVII plus the flagellum. Slightly different terminology is also used for leg I and pedipalp segment names: coxa, trochanter, femur, patellotibia, basitarsus, telotarsus, and apotele. The other legs do not have the patella and tibia fused as a patellotibia. The female genital sternites were examined in lactophenol.

Acronyms for collections are: MSC — Private collection of Matsuei SHIMOJANA, Okinawa; NSMT — National Science Museum (Natural History), Tokyo; SYC — Private collection of Koichi SEKIGUCHI and Tsukané YAMASAKI, Tokyo; TMM — Texas Memorial Museum, The University of Texas, Austin; ZIZM — Zoologisches Institut und Zoologisches Museum, Hamburg; ZMB — Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität, Berlin; ZMK — Zoologisk Museum, København.

### Key to *Schizomus* from Japan and Taiwan

(the male of *S. yamasakii* is unknown)

1. Propeltidium with three apical setae plus four (rarely three or five) pairs of dorsal setae; spermathecae with at least three lobes (Fig. 4)..... 2
- Propeltidium with three apical setae plus three pairs of dorsal setae; spermathecae with two lobes (Figs. 1-2, 5)..... 3
2. Male opisthosomal segment XII with dorsal process (YAMASAKI & SHIMOJANA, 1974: figs. 20, 22); female with secondary lobes on primary spermathecal lobes (COKENDOLPHER & REDDELL, 1986: figs. 2, 4)..... *S. siamensis*
- Male opisthosomal segment XII without dorsal process; spermathecae with three simple lobes (Fig. 4)..... *S. sawadai*
3. Opisthosomal tergum VIII with one pair of dorsal, one pair of dorsolateral, and one pair of lateral setae..... *S. sauteri*
- Opisthosomal tergum VIII with one pair of dorsal and one pair of lateral setae .....
- ..... 4
4. Palpal trochanter rounded distally (Fig. 6)..... *S. yamasakii*
- Palpal trochanter sharply angled distally (SHIMOJANA, 1981: figs. 6-7)..... *S. daitoensis*

*Schizomus daitoensis* (SHIMOJANA), new combination

[Japanese name: Daitô-yaitomushi]

(Fig. 1)

*Trithyreus daitoensis* SHIMOJANA, 1981, Acta arachnol., **30**, pp. 33–40, figs. 1–19; 1982, Atypus, Osaka, (81), p. 46.

*Type data.* Hoshino-no-ana Cave, Minami-daitô-jima, Okinawa Prefecture, Japan (31 July 1977, M. SHIMOJANA), ♂ holotype, ♀ paratype, 2 ♂♂ paratypes (NSMT-Ad 8–10); Imamura-dô Cave, Minami-daitô-jima (1 Aug. 1977, M. SHIMOJANA), 1 ♂ paratype (MSC); Hokusen-dô Cave, Kita-daitô-jima (24 July 1977, M. SHIMOJANA), 2 ♂♂ paratypes (MSC); Miyagi-dô Cave, Kita-daitô-jima (26 July 1977, M. SHIMOJANA), 1 ♂ paratype (MSC); Tamaki-daiichi-dô Cave, Kita-daitô-jima (26 July 1977, M. SHIMOJANA), 1 ♂ paratype (MSC).

*Other record.* Japan: Okinawa Prefecture: Kita-daitô-jima, Nakasone-dô Cave (26 July 1977, M. SHIMOJANA), 1 ♀ (NSMT-Ad 11).

*Identification.* When SHIMOJANA (1981) described *S. daitoensis*, he compared the species to *S. sawadai*. Although the male flagella appear similar, these two species are probably not each others nearest kin. The similarities in setation and female genitalia suggest a closer relationship to *S. yamasakii*. *Schizomus daitoensis* and *S. yamasakii* can be distinguished from congeners of the region by setation of the propeltidium and opisthosomal tergum VIII (see key for details). The large paired lobes of the female spermathecae are highly sclerotized and easily seen without the removal from the specimen in these two species. Morphology of the spermathecae (Figs. 1, 5) can be used to separate these species from each other.

*Supplemental description.* SHIMOJANA (1981) provides a good description of this species. The female internal genitalia (Fig. 1) consist of a short, retractable, bifurcate gonopod and two-lobed spermathecae. The lobes are highly sclerotized and easily observed through the ventral surface of the animal. The irregularly shaped lobes are not covered by scales or tubules.

*Distribution.* This species is known only from caves on the Daitô Islands, Okinawa Prefecture, Japan.

*Schizomus sauteri* KRAEPELIN

[Japanese name: Zautâ-yaitomushi]

(Figs. 2–3)

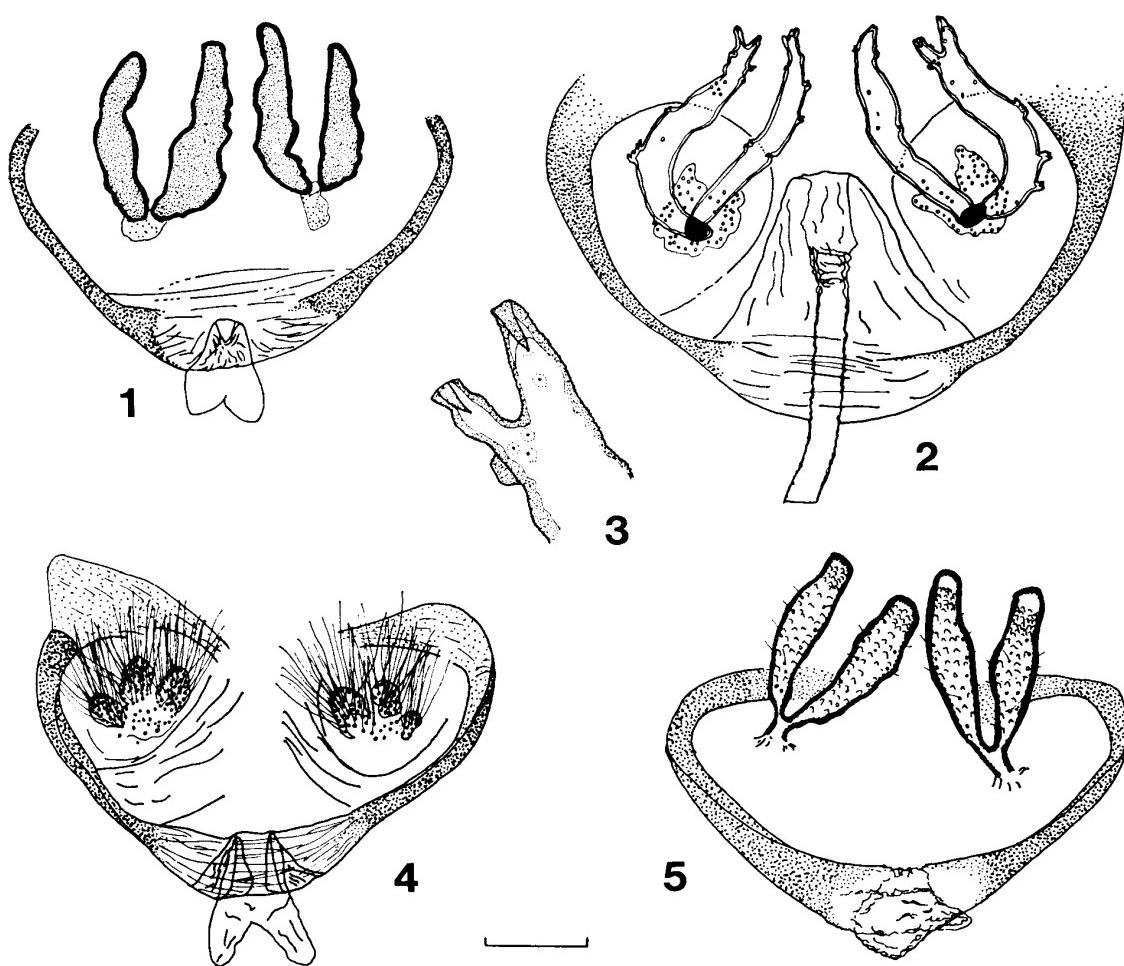
*Schizomus sauteri* KRAEPELIN, 1912, Jahrb. hamburg. wiss. Anst., **28**, pp. 100–101, 107, pl. (fig. 2a–h).—GRAVELY, 1925, Rec. Ind. Mus., **26**, p. 61.—KISHIDA, 1930, Lansania, Tokyo, **2** (12), p. 17; 1959, Anim. Okinawa Isl., p. 384.—GILTAY, 1935, Bull. Mus. roy. Hist. nat. Belg. **11** (32), p. 7.—WERNER, 1935, Kl. Ordn. Tierreichs, **5** (4), p. 478.—SPEIJER, 1936, Mitt. zool. Mus. Berlin, **21**, p. 260.—TAKASHIMA, 1941a, Biogeographica, Tokyo, **3**, pp. 276–278; 1941b, Acta arachnol., **6**, pp. 93–94, figs. 5–7; 1943, ibid., **8**, pp. 17, 22–23; 1947, ibid., **10**, pp. 44–45; 1948, ibid., **10**, pp. 100–102, fig. 3; 1965, Encycl. Fn. Japan, p. 341, unnumbered fig. —

SILVESTRI, 1947, Boll. Lab. Ent. Agr. Port., 7, pp. 13, 29, fig. IX (3-4). —— ESAKI, 1949, Encycl. Fn. Japan, p. 1002, fig. 2849. —— WEIDNER, 1959, Mitt. hamburg. zool. Mus. Inst., 57, p. 141. RÉMY, 1961a, Bull. Mus. natn. Hist. nat., 33, pp. 407, 414; 1961b, ibid., 33, pp. 509-510. —— SHIMOJANA, 1972, Idén, Tokyo, 26 (5), pp. 100-101, figs. 1-3; 1973, Okinawa Assoc. biol. Educ., (6), pp. 5, 12, 22; 1982, Atypus, Osaka, (81), p. 46. —— AOKI, 1973, Soil Zool., p. 197, fig. 71A. —— YAMASAKI & SHIMOJANA, 1974, Annot. zool. japon., 47, pp. 157, 176-180, 185, figs. 1-6, 7(a-b), 8-11. —— ROWLAND & REDDELL, 1977, Assoc. Mexican Cave Stud. Bull., (6), p. 80.  
*Schizomus auteri*: MELLO-LEITÃO, 1931, Arch. Mus. nac., Rio de Janeiro, 33, p. 18 (lapsus calami).

*Type data.* Kao-hsiung [=Takao], Taiwan (8 Feb. 1906, Hans SAUTER). In the original description the exact number of syntypes was not stated, only that there were numerous ♂♂, ♀♀, and juveniles deposited in the "Hamburger Naturhistorischen Museums." There currently are nine vials of syntypes (ZIZM), 10 syntypes (ZMK), and 1 ♂, 2 ♀♀, 1 juv. ♂ (opisthosoma only) syntypes (ZMB: Kat. Nr. 15838). These latter specimens are not listed as ZMB types by MORITZ and FISCHER (1980), but data on the specimen labels reveal SPEIJER (1936) was correct in reporting them as syntypes. I have only examined the specimens from ZMB, therefore no lectotype designation is made herein.

*Other records.* Taiwan: Chih-shang-yen near Taipei (no. specimens?) (TAKASHIMA, 1941b). Hengchun Peninsula, Kunting Park (no. specimens?) (SHIMOJANA, 1972).

Japan: Ryūkyū-shotō [=Ryukyu Islands]: Kagoshima Prefecture: Amami-shotō: Amami-Ōshima [=Amami-Oshima]: Uken-son, Mt. Yuwan (SHIMOJANA, 1972). Kikai-jima: Nanatigama Cave, 1 ♂, 2 ♀♀ (SHIMOJANA, 1973); Unnamed cave in Takigawa, 2 ♂♂, 3 ♀♀, 2 juv. ♀♀ (SHIMOJANA, 1973). Okino-Erabu-jima: Erabu-dō Cave, 1 juv. ♂ (SHIMOJANA, 1973). Okinawa Prefecture: Okinawa-shotō: Iye (=Ie)-jima: Nahanshiyari Cave, 1 juv. ♀ (SHIMOJANA, 1973); Niyatiya-gama Cave, 2 ♀♀ (SHIMOJANA, 1973). Miyagusuki-jima: Amuji-gama Cave, 2 juv. ♀♀ (SHIMOJANA, 1973); Ichimi-gama Cave, 2 juv. ♀♀ (SHIMOJANA, 1973); Kanida-gama Cave, 1 ♂ (SHIMOJANA, 1973). Okinawa-jima: Ginowan, Nogasa, Taaba-dō Cave (SHIMOJANA, 1972); Ginowan-shi, Futenma, Futenma-gū-dō Cave (SHIMOJANA, 1972); Ginowan-shi, Maebara, Amaga-wa-dō Cave (SHIMOJANA, 1972); Ginoza-son, Matsuda, Maekawa-dō Cave (SHIMOJANA, 1972); Ishikawa-shi, Iba, Terano-dō Cave (SHIMOJANA, 1972); Kinson, Kin, Nisshū-dō Cave (SHIMOJANA, 1972); Uezu, Gushikawa-shi, Mayaa-gama Cave, 2 ♂♂, 2 ♀♀, 3 juv. ♀♀ (23 July 1972, M. SHIMOJANA) (NSMT-Ad 53-54), 1 ♂, 1 ♀ (TMM); Naha-shi, Shuri (SHIMOJANA, 1972); Shuri (TAKASHIMA, 1941); Yomitán-son, Namibira, Shimuku-dō Cave (SHIMOJANA, 1972). Kumé-jima: Yajaa-gama Cave, Nakachi, Gushikawa-son, 1 ♀, 1 juv. ♀ (4 August 1972, S.-I. UÉNO) (NSMT-Ad 51). Sakishima-shotō: Miyako-rettō: Miyako-jima: Nakabari, Gusukubé-chō, Abucha-dō Cave, 2 ♂♂ (2 August 1972, S.-I. UÉNO) (NSMT-Ad 50, 52); Gusukubé-chō, Hika, Isagama-dō Cave (SHIMOJANA, 1972); Hirara-shi, Nikadori, Narukawa-dō Cave (SHIMOJANA, 1972). Yaeyama-rettō: Ishigaki-jima: Ishigaki-shi, Inoda, Inoda-dō Cave (SHIMOJANA, 1972); Ishigaki-shi, Ohama, Ohama-dō Cave (SHIMOJANA, 1972);



Figs. 1–5. Female *Schizomus* species internal genitalia. —— 1. Paratype of *S. daitoensis*. 2. Paralectotype of *S. sauteri*. 3. Paralectotype of *S. sauteri*, detail of spermathecal lobe. 4. *S. sawadai* (NSMT-Ad 62). 5. Holotype of *S. yamasakii*. Scale line=0.05 mm for Figs. 1–2, 4–5; 0.015 mm for Fig. 3.

Ishigaki-shi, Shiraho, Tajinano-abu Cave, 1 ♀ (SHIMOJANA, 1973); Ishigaki-shi, Ohama, Kaasunia-iizaa Cave, 1 juv. ♀ (SHIMOJANA, 1973). Yonaguni-jima [= Yamaguni Island]: Yonaguni-chō, Kubura, Hyandagu-abu Cave, 1 ♀ (SHIMOJANA, 1973); Yonaguni-chō, Kubura, Tarumai-abu Cave, 1 juv. ♀ (SHIMOJANA, 1973).

*Identification.* *Schizomus sauteri* is readily separated from other congeners of the region by the increased number of setae on opisthosomal tergum VIII (total of six setae, four in other species) and by generally having the postpeltidium entire (always split in other species). The presence of four articles in the female flagellum also serves to separate *S. sauteri* from others of the region.

*Supplemental description.* This species has been redescribed and illustrated by YAMASAKI and SHIMOJANA (1974). In addition to the opisthosomal setae noted by

those authors, there are additional setae on terga VII–IX: Tergum VII with one pair of dorsal, one pair of dorsolateral, and one pair of lateral setae; tergum VIII with one pair of dorsal, one pair of dorsolateral, and one pair of lateral setae; tergum IX with one pair of dorsolateral and one pair of lateral setae.

The female internal genitalia consist of a long, simple, retractable gonopod and two-lobed spermathecae (Fig. 2). The spermathecal lobes are irregularly covered by tubules and small, pit-bearing tubercles (Fig. 3). The tubules are not evident at lower magnifications, but the bases are easily discerned at 450 $\times$ . The spermathecae are not darkly pigmented and therefore they are difficult to see without first removing them from the female body.

*Distribution.* This species is known from Socialist Republic of Vietnam (SILVESTRI, 1947), Taiwan, and southern islands of Japan.

*Comments.* This species has been collected in February, April, and June–October, with the majority being from June and July. SILVESTRI (1947) reported this species was found in the fungus chamber of *Macrotermes barneyi* LIGHT. *Schizomus sauteri* is a frequent cave-inhabitant and has also been frequently found in leaf mold and more rarely in shaded areas in woods.

### *Schizomus sawadai* (KISHIDA)

[Japanese name: Sawadamushi]

(Fig. 4)

*Trithyreus sawadai* KISHIDA, 1930, Lansania, Tokyo, **2** (12), p. 19, unnumbered fig. — TAKASHIMA, 1941a, Biogeographica, Tokyo, **3**, pp. 276–278; 1941b, Acta arachnol., **6**, p. 97; 1943, ibid., **8**, pp. 17, 20–22, fig. 4; 1947, ibid., **10**, pp. 45–46; 1948, ibid., **10**, p. 103. — SHIMOJANA, 1972, Idén, Tokyo, **26** (5), p. 102; 1981, Acta arachnol., **30**, p. 33. — SEKIGUCHI & YAMASAKI, 1975, Acta arachnol., **26**, pp. 79–80.

“*Trithyreus*” *sawadai*: SEKIGUCHI & YAMASAKI, 1972, Acta arachnol., **24**, p. 73.

[*Trithyreus sawadai*]: MATSUMOTO, SHINKAI & ONO, 1976, Spiders, p. 112, fig. 2 (above and below).

*Schizomus sawadai*: SEKIGUCHI & YAMASAKI, 1972, Acta arachnol., **24**, pp. 74–81, figs. 1–18; 1975, ibid., **26**, pp. 79–80.

*Trithyreus* sp.: TAKASHIMA, 1948, Acta arachnol., **10**, pp. 103–104, fig. 4. — AOKI, 1973, Soil Zool., p. 197, fig. 71B. — SEKIGUCHI & YAMASAKI, 1975, Acta arachnol., **26**, p. 80.

*Type data.* Ogasawara-shotô [=Bonin Islands], Tokyo Prefecture, Japan (summer 1929, Shûzaburô SAWADA), ♀ holotype lost during World War II (UÉNO, pers. comm. 2 July 1984). The ♂ (No. 5) and ♀ (No. 16) on which SEKIGUCHI and YAMASAKI (1972) based their redescription of this species were apparently considered types by those authors.

*Other records.* Japan: Tokyo Prefecture: Ogasawara-shotô [=Bonin Islands]: Chichi-jima: upper part of Sakai-ura, 1 ♀ (NSMT-Ad 61); 3 ♂♂, 1 ♀ (SYC): Kita-fukurozawa, 1 ♂ (NSMT-Ad 62), 7 ♀♀ (SYC); catchment area at the slope of Nyuto-zan, 1 ♀ (SYC); side of Fukiage-bashi, ca. 200 m altitude, near the mountain pass between Kasa-yama and Chuo-zan, 1 ♀ (SYC).

*Identification.* *Schizomus sawadai* and *S. siamensis* are easily separated from other schizomids in the region by having four primary pairs of dorsal propeltidial setae; female internal genitalia with a long bifurcate gonopod and spermathecae with three or four lobes. Females of *S. sawadai* are best separated from *S. siamensis* by the lack of smaller lobes on the three main spermathecal lobes. Males of *S. sawadai* can be easily recognized by details of the flagellum (see SEKIGUCHI & YAMASAKI, 1972: figs. 14–16; and description below). Unlike the other males from the region, this species lacks the dorsal process on opisthosomal segment XII [the opisthosomal process of *S. sauteri* is small, but present].

*Supplemental description.* The features of this species have been described and illustrated by KISHIDA (1930) and SEKIGUCHI and YAMASAKI (1972), but the following supplemental data should be noted.

Propeltidium with three apical setae and four pairs (three pairs mesal, one pair near posterior end) dorsal setae.

Opisthosomal tergum I with two setae pairs of small setae anteriorly and a pair of larger setae posteriorly; tergum II with three pairs of small setae anteriorly and a pair of larger setae posteriorly; terga III–VII each with one pair of setae dorsally; tergum VIII with one pair of dorsal and one pair of small lateral setae.

Male from Kita-fukurozawa with a pair of pits on dorsal surface of flagellum. Dorsal pits about half the distance from point of segment XII attachment; slightly more posterior in position than ventral depressions illustrated by SEKIGUCHI and YAMASAKI (1972: fig. 14).

Female internal genitalia composed of a long, retractable, bifurcate gonopod and simple three-lobed spermathecae (Fig. 4). The numerous tubules leading from the spermathecae are visible only by higher magnifications (900 $\times$ ), but the bases of the tubules are easily seen at much lower magnifications.

*Distribution.* This species is known only from the Bonin Islands, Tokyo Prefecture, Japan.

*Comments.* This species was collected in April and was found “under stones in the house ruins now covered mainly by the *Leucaena glauca* (Ginnemu, Leguminosae) bush or the *Ardisia Sieboldii* (Mokutachibana, Myrsinaceae) trees. The environments are dark even in the daytime. The whip-scorpion moves very quick and clings on the underside of stones. Some females were pregnant, and bred in laboratory for about four months being fed with *Drosophila* flies, but they laid no eggs” (SEKIGUCHI & YAMASAKI, 1972).

This species has been moved back and forth to the genus *Schizomus*, since its original description in *Trithyreus* (SEKIGUCHI & YAMASAKI, 1975). The identity of *Trithyreus* is now better understood and the only species known from southeastern Asia is *Trithyreus claviger* HANSEN, in HANSEN & SØRENSEN, 1905, from Singapore (REDDELL & COKENDOLPHER, 1985).

*Schizomus siamensis* (HANSEN, in HANSEN & SÖRENSEN)

[Japanese name: Udenaga-yaitomushi]

*Trithyreus siamensis* HANSEN, in HANSEN & SÖRENSEN, 1905, Ark. Zool., 2 (8): 51–52, 57–59, 61, 65, 75–76, pl. 5 (fig. 2 a–h).

*Schizomus siamensis*: MELLO-LEITÃO, 1931, Arch. Mus. nac., Rio de Janeiro, 33, p. 18.—COKENDOLPHER & REDDELL, 1986, Acta arachnol., 35, pp. 23–27, figs. 1–4 (see for complete synonymy).

*Type data.* Krung Thep [=Bangkok], Phra Nakkhon Changwat, Thailand (pre-1905, E. HAASE), ♂ lectotype (designated by COKENDOLPHER & REDDELL, 1986), ♂, and 2 ♀ paralectotypes (ZMB No. 7154).

*Other records.* Japan: Ryūkyū-shotō [=Ryukyu Islands]: Okinawa Prefecture: Sakishima-shotō: Miyako-rettō: Miyako-jima, Higashinaka, Hirara-shi, Muzukagaa Cave, 1 ♂, 1 juv. (NSMT-Ad 59); Higashinaka, Hirara-shi Iza-gaa Cave, 2 ♀♀, 2 juv. (NSMT-Ad 55–56). Okinawa shotō: Okinawa-jima, Mashiki, Ginowan-shi, Mayaa-abu Cave, 1 ♂, 1 juv. ♀ (NSMT-Ad 57–58), 1 ♂ (8 July 1972, M. SHIMOJANA) (TMM).

*Identification.* Males of this species are easily recognized by the long dorsal process on opisthosomal segment XII and details of the flagellum (see YAMASAKI & SHIMOJANA, 1974: figs. 20–22). The long, retractable, bifurcate gonopod and multiple lobed spermathecae (see COKENDOLPHER & REDDELL, 1986: figs. 2–4) will separate *S. siamensis* from all other species of the region except *S. sawadai*. Females of these two species can be separated by details of the spermathecal lobes: simple in *S. sawadai*, secondarily lobed in *S. siamensis*. See also under “Identification” of *S. sawadai*.

*Description.* This species has been described and illustrated in detail by HANSEN and SÖRENSEN (1905), SHIMOJANA (1972), YAMASAKI and SHIMOJANA (1974), and COKENDOLPHER and REDDELL (1986).

*Distribution.* This species is reported from Hong Kong (SILVESTRI, 1947), Oahu, Hawaiian Islands (COKENDOLPHER & REDDELL, 1986), Ryukyu Islands of Japan, and Thailand.

*Comments.* SILVESTRI (1947) reported this species from the nest of *Macrotermes barneyi* LIGHT in Hong Kong. The specimens reported from Japan and Hawaii were all from limestone caves and are presumed to be troglophiles. “On 7 March 1979 a female with 6 young closely hugging her abdomen was found in an earthen cell attached to the under side of a flat rock” (HOWARTH & MONTGOMERY, 1982).

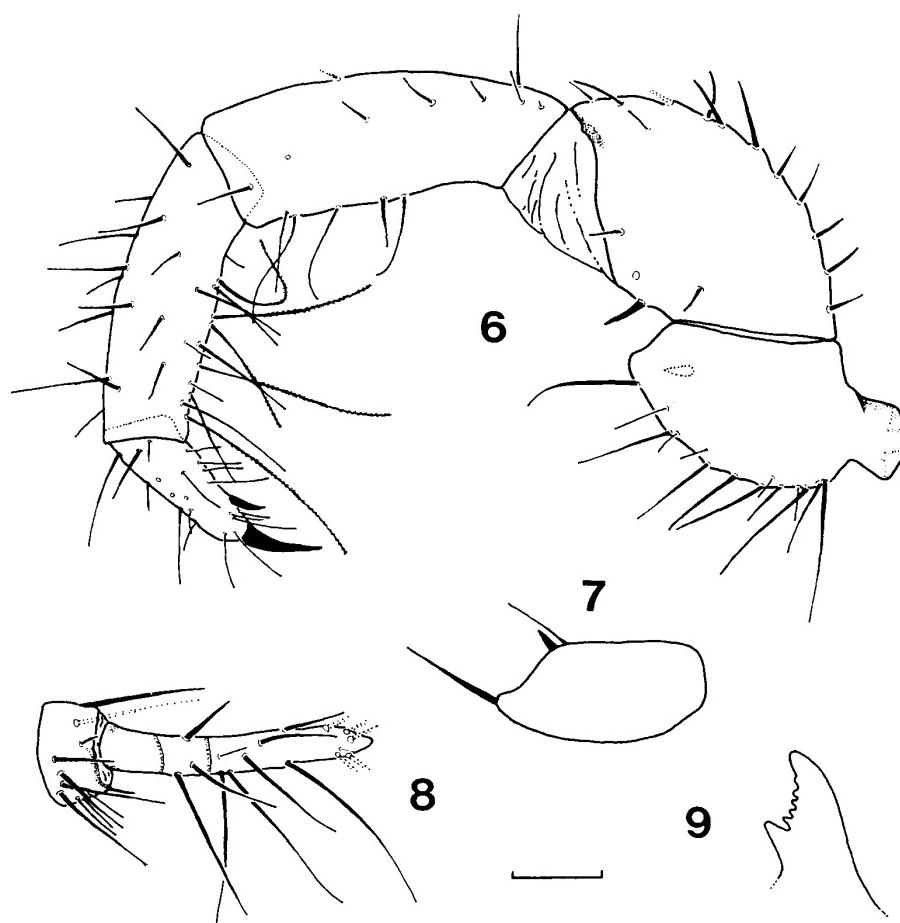
*Schizomus yamasakii* sp. nov.

[Japanese name: Yamasaki-yaitomushi]

(Figs. 5–9)

*Trithyreus siamensis*: YAMASAKI & SHIMOJANA, 1974, Annot. zool. japon., 47, pp. 175, 180–185, figs. 12–23 (part—Taiwan record only).

Species new to science: COKENDOLPHER & REDDELL, 1986, Acta arachnol., 35, p. 25.



Figs. 6-9. Holotype female *Schizomus yamasakii*.—6. Pedipalp, lateral view. 7. Pedipalp trochanter, cross-sectional view at level of spur. 8. Flagellum, lateral view. 9. Fixed jaw of chelicera, lateral view. Scale line=0.2 mm.

**Type data.** Yin-chuan-tsang-hsia-tung Cave, Kuei-chiao-liu, Ping-tung Hsien (=Kaochun), Taiwan, 2-IV-1965, S.-I. UÉNO leg. (NSMT-Ad 60), ♀ holotype.

**Diagnosis and comparisons.** Medium sized *Schizomus* with three pairs of dorsal propeltidial setae; indistinct eyespots; opisthosomal terga II-VII each with one pair of dorsal setae; flagellum with three articles; palpal trochanter rounded distally with spur on mesal margin; spermathecae with paired equal-sized lobes.

*Schizomus yamasakii* was misidentified by YAMASAKI & SHIMOJANA (1974) as *S. siamensis*. These two species are not each others nearest kin and are easily separated by characters given in the key. *Schizomus yamasakii* is closely related to *S. daitoensis* and can be separated from that species by details of the palpi and spermathecae (see key and identification under the former species).

**Description.** Male-unknown.

Female: (length from distal edge of propeltidium to base of flagellum, 4.45 mm). Body orangish-brown; legs and opisthosoma somewhat lighter.

**Prosoma:** Propeltidium 1.56 mm long, 0.87 mm wide; with one pair followed by single longer centered apical setae and three pairs of dorsal setae. Apical margin of propeltidium drawn to a sharp, down-turned point. Eyespots indistinct. Pro-dorsum arthrodial sclerites separated by the width of one sclerite. Postpeltidium divided. Sternum with 13 bifid setae, plus two long anteriorly directed setae arising from front of sternum. Sternite VII triangular with five setae (one anterior pair, one posterior pair, and one off center median seta).

**Opisthosoma:** Not attenuated; sternite V about 3.2 times wider than long. Setae on genital sternites simple, pointed. Tergum I with two pairs of very short setae anteriorly and a pair of dorsal setae on posterior margin. Terga II–VII each with one pair of dorsal setae, II with a pair of round depressions on the anterior margin and with three pairs of short setae anterior to these depressions. Tergum VIII with one dorsal pair and one lateral pair of setae; tergum IX with one pair dorsolateral and one pair lateral setae. Segments X–XII telescopic; X with three pairs of lateral and five long ventral setae; XI with two pairs of lateral and five ventral bifid setae; XII with two dorsal, one pair very small and 3–4 (three on one side, four on other side) lateral, and five small ventral setae. Flagellum of three articles, as in Fig. 8.

**Internal genitalia:** Spermathecae consisting of paired lobes (Fig. 5); lobe surfaces appearing sculptured at higher magnifications. Details of gonopod not visible. The internal genitalia (especially spermathecae) are darkly pigmented and are easily observed in the intact sternite.

**Chelicerae:** Fixed jaw with five teeth between large outer teeth (Fig. 9); movable jaw with single tooth. Chelicerae with following setation (terminology after LAWRENCE, 1969 a): three thick plumose type 1 setae; six plumose type 2 setae; three plumose type 3 setae; five simple and four longer dorsal (with plumose tips) type 4 setae; 10 plumose type 5 setae; one type 6 setae. Serrula with 21, plus guard, teeth. Proximal areas ventrally and mid-dorsal areas of chelicerae with minute spicules similar to those of *S. siamensis* illustrated by YAMASAKI and SHIMOJANA (1974, fig. 17).

**Pedipalps:** Short and stout (Figs. 6–7); trochanter laterally compressed, flattened ventrally, with spur on mesal side; apotele about 1/2 and tarsal spurs slightly less than 1/4 dorsal length of telotarsus.

Leg I, including coxa, 7.42 mm long, telotarsal segment length proportions: 17–2–3–3–4–4–8. Femur IV about three times longer than wide. Leg segment lengths (in mm):

Leg	Trochanter	Femur	Patella	Tibia	Basitarsus	Telotarsus
I	0.40	1.69		2.00	1.50	1.11
II	0.26	1.21	1.00	0.87	0.70	broken
III	0.32	1.06	0.56	0.64	0.73	0.50
IV	0.38	1.52	1.17	0.74	1.13	0.61.

**Distribution.** This species is known only from a single cave in Taiwan.

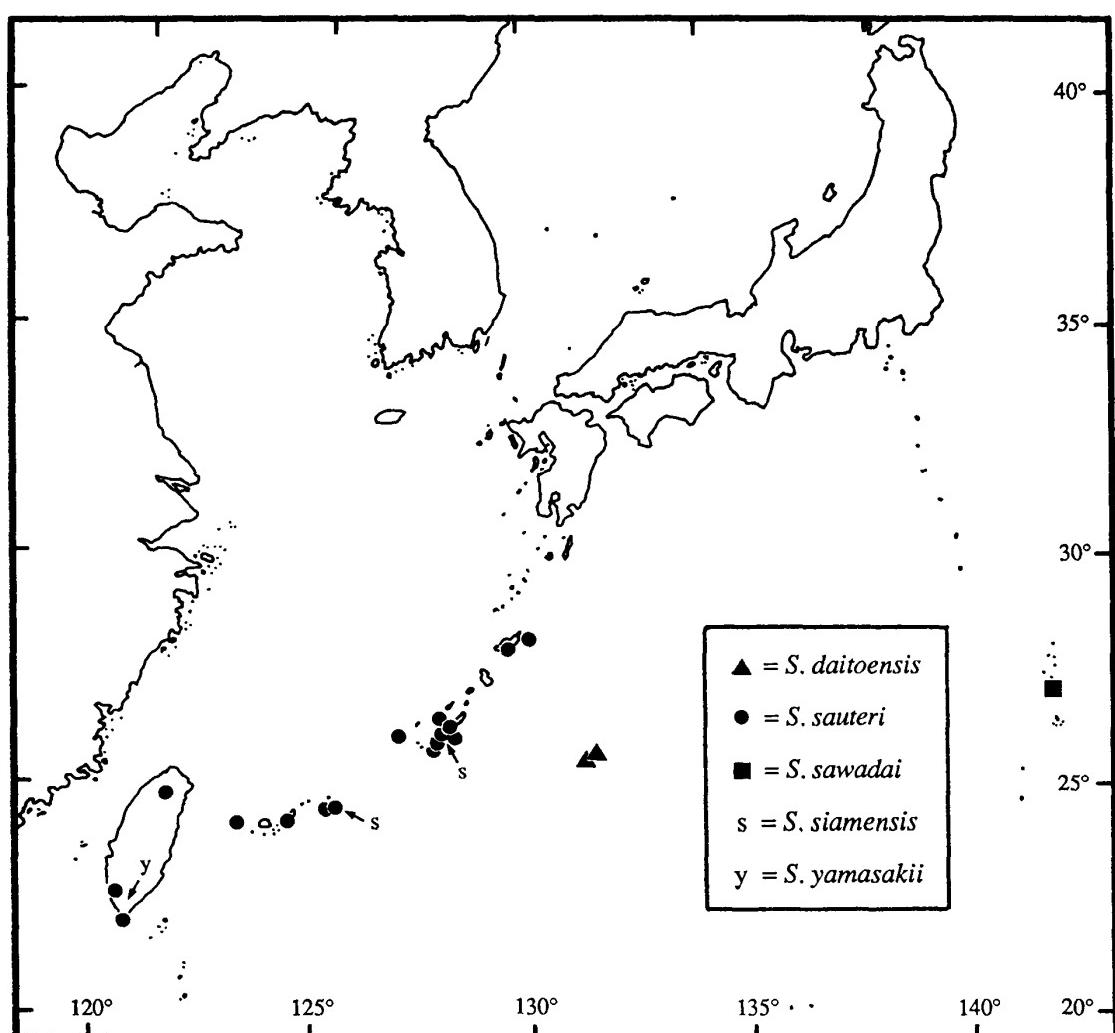


Fig. 10. Distribution of *Schizomus* species in Japan and Taiwan.

**Comments.** The stridulatory nature of the small spicules on the chelicerae of some schizomids has not been demonstrated, but see LAWRENCE (1969 b). There are minute ridges on the underside of the propeltidium of *S. yamasakii* which might be used in conjunction with the chelicerae for sound production. The spur on the palpal trochanter does not match well with the cheliceral spicules and thus probably has some other function than stridulation.

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